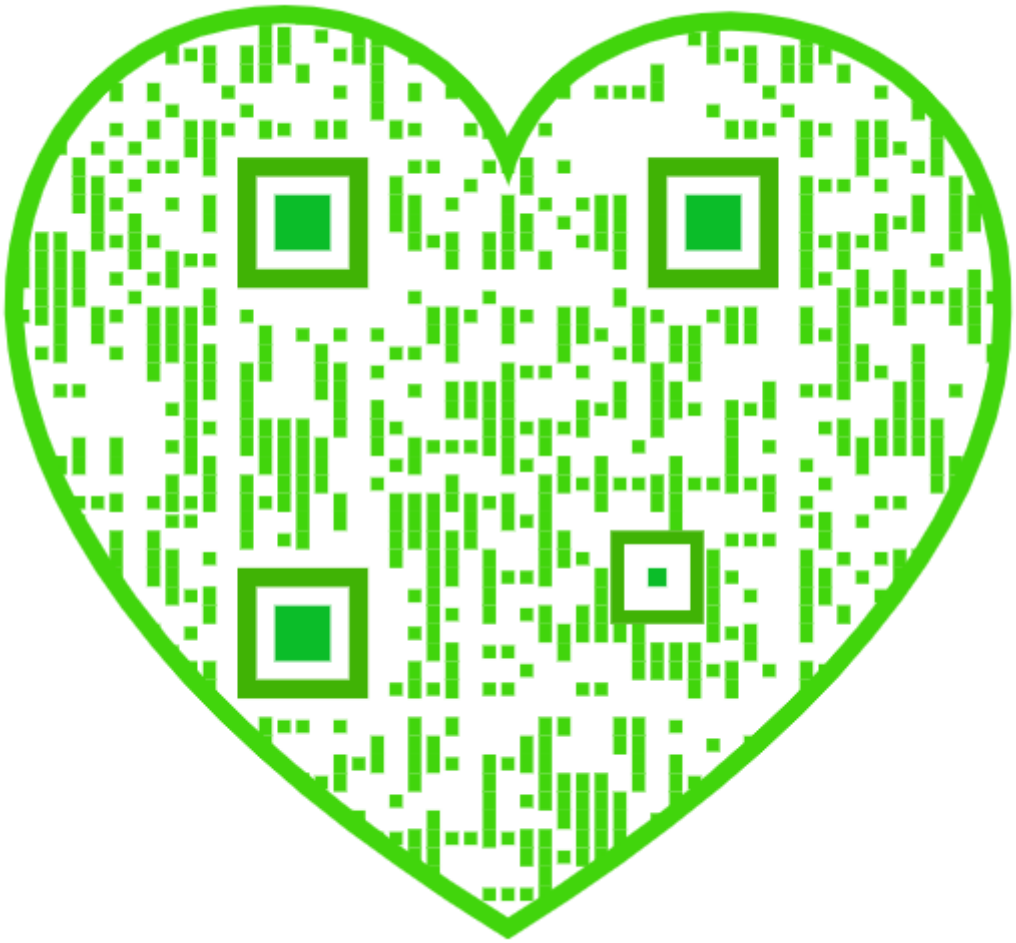

MORE TURPENTINE LESS SCAR BETTER PINE

NEW METHOD

FORMER FOREST SERVICE METHOD

COMMON PRACTICE

LEAFLET
NUMBER 83

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MORE TURPENTINE, LESS SCAR, BETTER PINE

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Low Chipping Proven Good

Increased yields and profits per tree, combined with better health and growth of the trees turpentined, result from reducing the height of chipping now commonly in use. Chipping one-fourth inch high per week gives better results than chipping one-half or three-quarters inch in height.

For five years this method of chipping was tested on longleaf pine timber growing on the Choctawhatchee National Forest in Florida. A stand of 60 closely matched longleaf pine trees averaging about 11 inches in diameter 4½ feet above the ground was divided into three groups of 20 trees each. Each week during the turpentining season one group was chipped as nearly one-fourth inch high as possible. Another group was chipped one-half inch high according to the then current Forest Service practice, which was known to give excellent results. The third group was chipped three-fourths inch high, as is frequently done commercially. All trees were chipped to a uniform depth of ½ inch beyond the bark into the wood. The ¼-inch chipping proved to be both practicable and profitable and is therefore recommended to turpentine operators and timber owners for commercial application. A detailed discussion of this test is given in United States Department of Agriculture Technical Bulletin 262.

Chippers Readily Learn to Reduce Height of Chips

After a little practice one-fourth inch high chips are cut successfully and without increased cost by the ordinary laborers. Small hacks, No. 0 or 00, facilitate the work. (Fig. 1.)

At first low chipping may require a little more time and care than the heavier, less accurate work. Even during the arduous work of first-year chipping, when the turpentined face is close to the ground, the ordinary chipper can chip a crop each week as formerly. After the first year the low faces are easier to chip than high faces and continue to be so for a number of years because the surface of the tree to be chipped continues to be within easy reach. The use of low faces also delays the time when the harder work involved in the use of the puller is required. When this time comes, however, chips only one-fourth inch in height are readily cut with this tool. Indeed, the workers prefer cutting the thin chips to the thicker ones formerly required.

[1] Maintained by the U. S. Department of Agriculture at Madison, Wis., in cooperation with the University of Wisconsin.

Advantages Gained by Low Chipping

Each tree gives a higher return if low chipping, approximately one-fourth inch in height, is used because:

1. The working life of a given face may thus be prolonged for several years, perhaps doubled, or the height of the scar on the tree for a given period may be proportionately reduced. This increases the leasing value of the timber, and reduces the waste of vital tissues which, when high chipping is used, are cut away before they can function. The height of the face at the end of one season's work need not exceed 8 to 12 inches as a result of 32 chippings or streaks. An average of 9 inches in height was obtained in the test. The picture on the cover shows (left) a representative face slightly more than 2 feet high after three years of low chipping as compared with one nearly 6 feet high (right) produced by ordinary commercial chipping during the same period. At the end of five years (fig. 2) the low faces were less than 4 feet high and the high faces nearly 10 feet.

FIGURE 1.—For ¼-inch chipping small hacks (left) are preferable to the "broad-billed" hacks (right) formerly used

2. The possible yields of oleoresin from each tree are increased by low chipping. The yields of oleoresin per inch of height of face in the low-chipped trees always strikingly exceeded those obtained from the higher-chipped trees. The total yield for the 5-year period of the test was fully as great from the low faces as from those over twice as high, although at the beginning the high-chipped trees yielded slightly more. More dip, rich in turpentine (fig. 3), was obtained from the low faces than from the high faces. The latter, however, produced more scrape which signifies a waste of turpentine and also a probable reduction in profits, since the scrape tends to make lower grades of rosin than the dip. The difference in the calculated value of the products obtained per crop from this first 5-year working of the timber showed a gain of several hundred dollars from the low faces as compared with the high, which at that time were already practically exhausted because out of reach.

3. Tree health and growing power are conserved by low chipping. This was clearly evident from a microscopical study of small chips of wood cut from time to time just above the turpentined faces.

Figure 2 shows representative chips cut after five years of turpentining. The markedly better growth in the low-chipped trees was indicated by earlier wood formation, wider annual rings, more abundant and better developed summer wood, and by better development of oleoresin-yielding tissues.

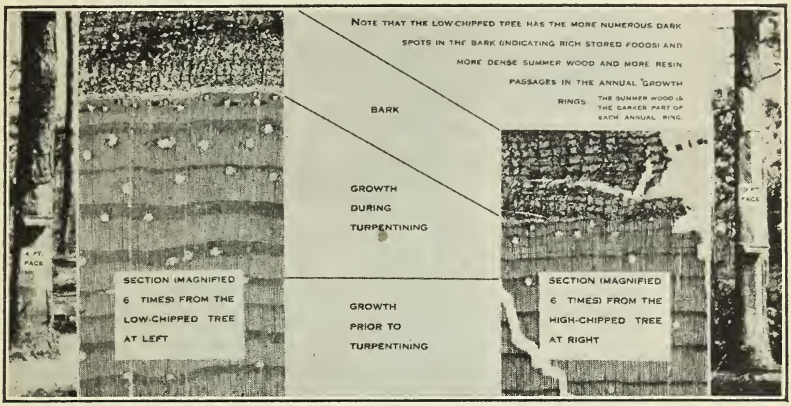
NOTE THAT THE LOW-CHIPPED TREE HAS THE MORE NUMEROUS DARK SPOTS IN THE BARK (INDICATING RICH STORED FOODS) AND MORE DENSE SUMMER WOOD AND MORE RESIN PASSAGES IN THE ANNUAL GROWTH RINGS. THE SUMMER WOOD IS THE DARKER PART OF EACH ANNUAL RING.
BARK
GROWTH DURING TURPENTINING
GROWTH PRIOR TO TURPENTINING
SECTION (MAGNIFIED 6 TIMES) FROM THE LOW-CHIPPED TREE AT LEFT
SECTION (MAGNIFIED 6 TIMES) FROM THE HIGH-CHIPPED TREE AT RIGHT

FIGURE 2.—Comparison of low and high chipping after five seasons of turpentining

Many of the extra resin passages, which form in a tree as a result of chipping, are short. Where high chipping is practiced, the short passages are soon cut away and wasted before they have had full opportunity to function. The low or ¼-inch chipping offers a

FIGURE 3.—Low chipping produces excellent yields of dip

distinct improvement, especially for young timber where several workings for oleoresin are planned.

Application

The use of low chipping presents many advantages and no significant disadvantages and can be applied at any time during a period of working. In fact, ¼-inch chipping is already being applied to both Government and privately owned timber.

Conservative turpentining, especially when used in conjunction with the practice of thinning pine stands for pulpwood, promises early profits before the final cutting of the trees for lumber. With low chipping there is each year less exposure of the wood to pitch soaking or insect attack and therefore less possible degrade of the

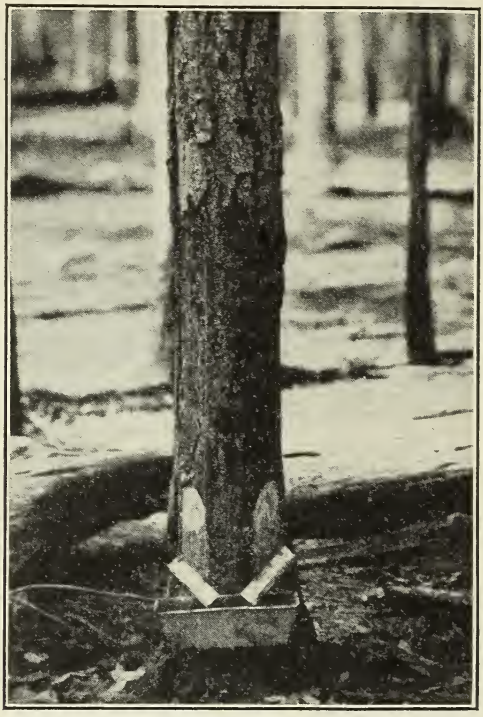

FIGURE 4.—Two French faces with a bar of bark between them give good yields combined with a minimum depletion of tree vigor

lumber obtained from the turpentined trees. The better maintained tree health and vigor also insure better wood formation and healing of the scar, thus hastening the rotation of later workings.

In applying low chipping the use of two French faces, with a 4-inch bar of bark between them, in place of one American face, gives further promise of high yields, excellent tree health, and the most rapid healing now known. (Fig. 4.)

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